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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,698	04/02/2004	Ki-Jung Kim	P57029	9737

7590 03/23/2006
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EXAMINER

WON, BUMSUK

ART UNIT PAPER NUMBER

2879

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/815,698	KIM ET AL.	
	Examiner	Art Unit	
	Burnsuk Won	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14-18, 20 and 27-30 is/are rejected.
- 7) ☒ Claim(s) 13, 19 and 21-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>04/04, 06/04, 03/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 10 and 11 are objected to because of the following informalities: Regarding claim 10, "a heat sinks" should be "a heat sink". Claim 11 is objected to due to its claim dependency. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Hwang (KR 1020020027801) which is Applicant's admitted prior art.

Regarding claim 18, Hwang discloses a plasma display device (figure 2), comprising: a plasma display panel (21) displaying images on a front surface (left portion of 21), the plasma display panel having a back surface (right portion of 21) opposite to the front surface; and a back cover (28) that covers and faces the back surface of the plasma display panel, the back cover being perforated by a plurality of openings (not referenced, enlarged section view of figure 2), each opening comprising a thermoelectric semiconductor device (27) arranged therein and adapted to draw heat away from the plasma display panel and through the openings in the back cover to an exterior of the plasma display device (page 3, lines 17-21).

Regarding claim 20, Hwang discloses driving circuit boards (23) arranged between the back cover (28) and back surface of panel (21), the thermoelectric semiconductor devices (27) also being adapted to draw heat away from the circuit boards and through the openings in the back cover to an exterior of the device (page 3, lines 17-21).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12, 14-17 and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hwang (KR 1020020027801) which is Applicant's admitted prior art in view of Kim (KR 1020010039120) which is Applicant's admitted prior art.

Regarding claim 1, Hwang discloses a plasma display device (figure 2), comprising: a plasma display panel (21) comprising a front surface (left) that displays images and a back surface (right) opposite to the front surface; a chassis base (22) attached to the back surface of the panel to support the panel, the chassis base comprising driving circuit boards (23) mounted on the chassis base; a back cover (28) arranged adjacent to a surface of the chassis base opposite the surface of the chassis base adjacent to the panel; and thermoelectric semiconductor devices (27) arranged on the back cover, comprising a heat absorbing surface (inside of the device) that faces the chassis base and a heat emitting surface (outside) that faces an exterior side of the back cover, and being adapted to discharge heat generated by the panel and driving circuit boards to the exterior side of the back cover (heat sink, 26, is used to discharge heat).

Hwang does not disclose having a front cabinet arranged adjacent to the front surface of the panel, and the back cover being assembled to the front cabinet with the chassis base and the panel arranged in between the back cover and the front cabinet.

Kim discloses a plasma display device (figure 6) comprising, in part, a plasma display panel (1), a chassis base (3), a front cabinet (5), and a back cover (6), wherein the front cabinet is arranged adjacent to the front surface of the panel (1), the back cover and the front cabinet are assembled together while the

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panel and the chassis base are between back cover and the front cabinet, for the purpose of achieving a maximized radiation efficiency (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a front cabinet arranged adjacent to the front surface of the panel, and the back cover being assembled to the front cabinet with the chassis base and the panel arranged in between the back cover and the front cabinet disclosed by Hwang in the plasma display device disclosed by Hwang, for the purpose of achieving a maximized radiation efficiency.

Regarding claim 2, Hwang discloses the thermoelectric semiconductor devices are electrically connected to a power supply board via thermoelectric semiconductor drivers (page 3, lines 17-28).

Regarding claim 3, Hwang discloses a temperature sensor (page 3, line 24) adapted to detect an internal temperature of the device and output corresponding signals; and a controller (page 3, lines 25-26) adapted to receive the corresponding temperature signals from the temperature sensor, the controller being programmed and configured to control an operation of thermoelectric semiconductor devices based on the detected internal temperature of the device (page 3, lines 24-26).

Regarding claim 4, Hwang discloses the back cover (28) being perforated by openings (not referenced, enlarged section view of figure 2), thermoelectric semiconductor devices (27) being arranged in the openings in the back cover.

Regarding claim 5, Hwang discloses the thermoelectric semiconductor devices (27) are arranged on a surface of the back cover (28) adjacent to the chassis base (22) such that the heat emitting surfaces (27b) of the thermoelectric semiconductor devices contact the back cover (28).

Regarding claim 6, Hwang discloses the thermoelectric semiconductor devices (figure 3, 37) are fixed to the exterior surface of the back cover (38) adjacent to the chassis base (32) such that the heat absorbing surfaces (37a) of the thermoelectric semiconductor devices contact the back cover (28).

Regarding claim 7, Hwang discloses thin metal plates (26a, extension of heat sink) being attached to heat absorbing surfaces (27a) of thermoelectric semiconductor devices, and thin metal plate having larger surface area than the corresponding thermoelectric semiconductor devices (figure 2, enlarged section view).

Regarding claim 8, Kim discloses a thin metal plate (figure 6, 3) that is attached to thermoelectric semiconductor (13) is made of aluminum (page 2, line 33). The reason for combining is the same as for claim 1 above.

Regarding claim 9, Hwang discloses a thermal conduction member (25) between the thermoelectric semiconductor device (27) and thin metal plates (26).

Regarding claim 10, Hwang discloses a heat sink (26) being arranged on corresponding heat absorbing surfaces (27a) of the thermoelectric semiconductor devices.

Regarding claim 11, Hwang discloses a thermal conduction member (25) between the thermoelectric semiconductor device (27) and thin metal plates (26).

Regarding claim 12, Hwang discloses a heat sink (26) being arranged on corresponding heat absorbing surfaces (27b) of the thermoelectric semiconductor devices.

Regarding claim 14, Hwang discloses a plasma display device (figure 2), comprising: a plasma display panel (21) comprising a front surface (left) that displays images and a back surface (right) opposite to the front surface; a chassis base (22) attached to the back surface of the panel to support the panel, the chassis base comprising driving circuit boards (23) mounted on the chassis base; a back cover (28) arranged adjacent to a surface of the chassis base opposite the surface of the chassis base adjacent to the panel; and thermoelectric semiconductor devices (27) arranged on the back cover, comprising a heat absorbing surface (inside of the device) that faces the chassis base and a heat emitting surface (outside) that faces an exterior side of the back cover, and being adapted to discharge heat generated by the panel and driving circuit boards to the exterior side of the back cover (heat sink, 26, is used to discharge heat).

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The claim limitation “the plurality of thermoelectric semiconductor devices maintaining a temperature in areas around the plasma display panel and the driving circuit boards in the range of 50 – 60 degree C” is an operational limitation, and does not have patentable weight.

Hwang does not disclose having a front cabinet arranged adjacent to the front surface of the panel, and the back cover being assembled to the front cabinet with the chassis base and the panel arranged in between the back cover and the front cabinet.

Kim discloses a plasma display device (figure 6) comprising, in part, a plasma display panel (1), a chassis base (3), a front cabinet (5), and a back cover (6), wherein the front cabinet is arranged adjacent to the front surface of the panel (1), the back cover and the front cabinet are assembled together while the panel and the chassis base are between back cover and the front cabinet, for the purpose of achieving a maximized radiation efficiency (abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a front cabinet arranged adjacent to the front surface of the panel, and the back cover being assembled to the front cabinet with the chassis base and the panel arranged in between the back cover and the front cabinet disclosed by Hwang in the plasma display device disclosed by Hwang, for the purpose of achieving a maximized radiation efficiency.

Regarding claim 15, Hwang discloses a temperature sensor (page 3, line 24) adapted to detect an internal temperature of the plasma display device and outputting corresponding temperature signals (page 3, lines 24-26); and a controller (figure 2, 23) arranged to receive the temperature signals from the temperature sensor, the controller being programmed and configured to control the thermoelectric semiconductor devices based on the received temperature signals (page 3, lines 24-26).

Regarding claim 16, the programming and configuration of controller is intended operating use/conditions that are not afforded patentable weight (MPEP 2114).

Regarding claim 17, the first reference temperature being 55-65 degree C, the second reference temperature being between 50-60 degree C, and the second reference being less than the first reference are operational limitation, and does not have patentable weight (MPEP 2114).

Regarding claim 27, Hwang discloses a plasma display device (figure 2), comprising: a plasma display panel (21) comprising a front surface (left portion) that displays images and a back surface (right portion) opposite to the front surface; a chassis base (22) attached to the back surface of the plasma display panel and arranged to support the plasma display panel, the chassis base comprising a plurality of driving circuit boards (23) mounted on the chassis base; a back cover (28) arranged on a side of the chassis base opposite the side of the chassis base facing the plasma display panel, a plurality of thermoelectric semiconductor devices (27) arranged between the back cover and the chassis base and adapted to draw heat away from the driving circuit boards and the plasma display panel to an outside of the plasma display panel through the back cover (page 3, lines 17-21); and a heat sink (26) arranged between the plurality of thermoelectric semiconductor devices and the chassis base, the heat sink being in contact (26b) with heat dissipating circuit elements on the driving circuit boards on the chassis base, the heat sink also being in contact (26a) with the plurality of thermoelectric semiconductor devices.

Hwang does not disclose having a front cabinet arranged adjacent to the front surface of the panel, and the back cover being assembled to the front cabinet with the chassis base and the panel arranged in between the back cover and the front cabinet.

Kim discloses a plasma display device (figure 6) comprising, in part, a plasma display panel (1), a chassis base (3), a front cabinet (5), and a back cover (6), wherein the front cabinet is arranged adjacent to the front surface of the panel (1), the back cover and the front cabinet are assembled together while the panel and the chassis base are between back cover and the front cabinet, for the purpose of achieving a maximized radiation efficiency (abstract). The reason for combining is the same as for claim 1 above.

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Regarding claim 28, Hwang discloses the thermoelectric semiconductor device (figure 3, 37) being in contact with the back cover (38).

Regarding claim 29, Hwang discloses the thermoelectric semiconductor device (27) is not being in contact with the back cover (28) and being separated from the back cover by a predetermined distance (figure 2).

Regarding claim 30, Hwang discloses the back cover being perforated by holes (figure 2, enlarged section), the holes being adapted for ventilation (the hole in the figure is larger than the thermoelectric semiconductor device).

Allowable Subject Matter

Claims 13, 19 and 21-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 13, the prior art of record neither shows nor suggest a plasma display device comprising, in part, an insulating cover arranged over heat emitting surface of thermoelectric semiconductor devices, along with the rest of the limitations of the claim.

Regarding claim 19, the prior art of record neither shows nor suggest a plasma display device having a thermoelectric semiconductor device comprising, in part, metal strips being electrically connected each other inside openings of back cover, along with the rest of the limitations of the claim.

Claims 21-26 are objected to due to their claim dependency.

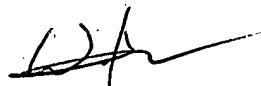
Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bumsuk Won whose telephone number is 571-272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Bumsuk Won
Patent Examiner



JOSEPH WILLIAMS
PRIMARY EXAMINER